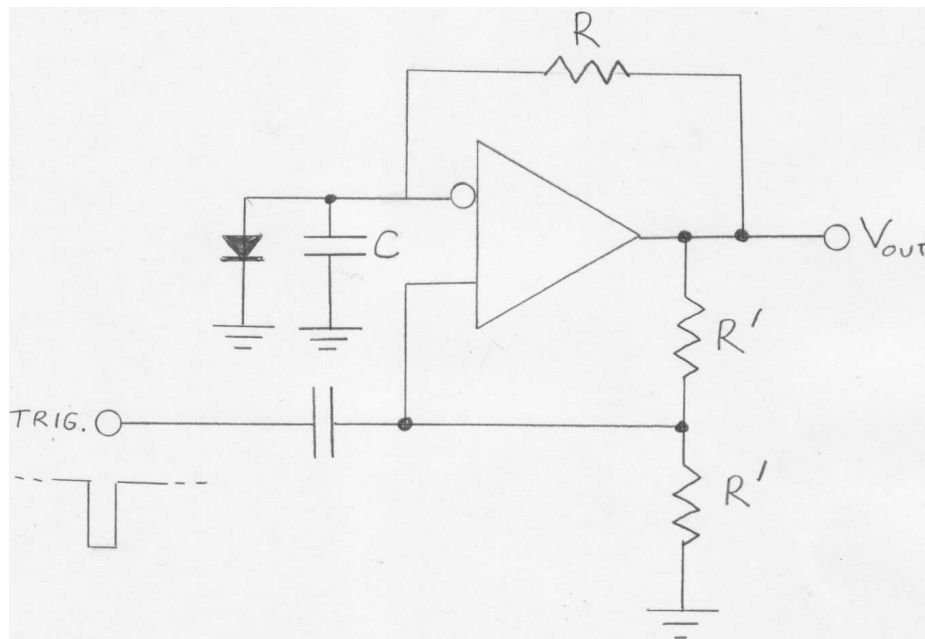
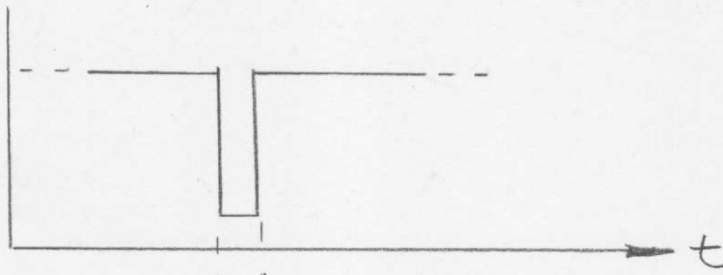


Physics 334, Winter Quarter 2013
Electric Circuits Laboratory I
Homework Assignment 8
Due Tuesday March 5



1. Consider the op-amp circuit above configured as a monostable (or “one shot”). The “Trig” input is a single negative-going pulse. The op-amp is driven from +12V and -12V power supplies.
 - a. In 10 words or less, why’s it called a “monostable”?
 - b. Long before the Trig pulse, what’s V_{out} ?
 - c. Long after the Trig pulse, what’s V_{out} ?
 - d. In 10 words or less, what’s the function of the diode?
 - e. Suppose a Trig pulse arrives: Draw the resulting voltage waveforms at the inverting terminal of the op-amp and at the op-amp output. The figure should show relevant times and voltages.

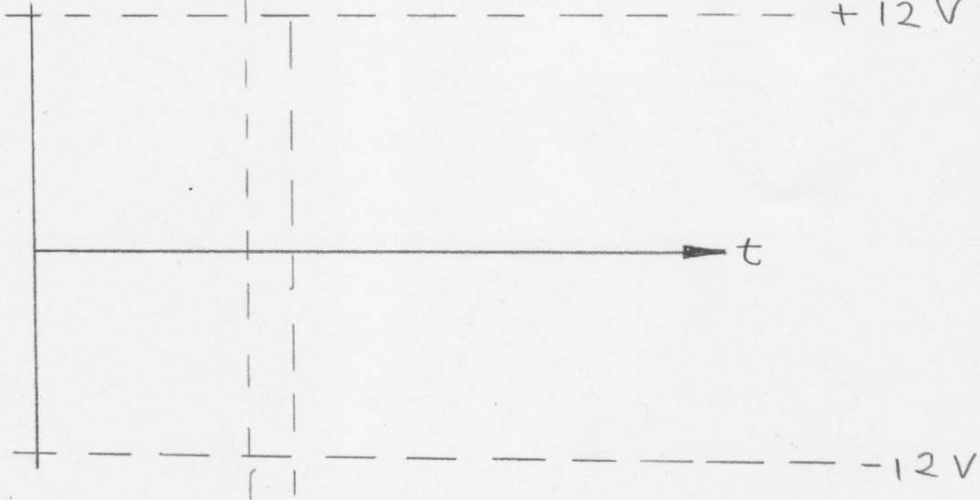
TRIG.

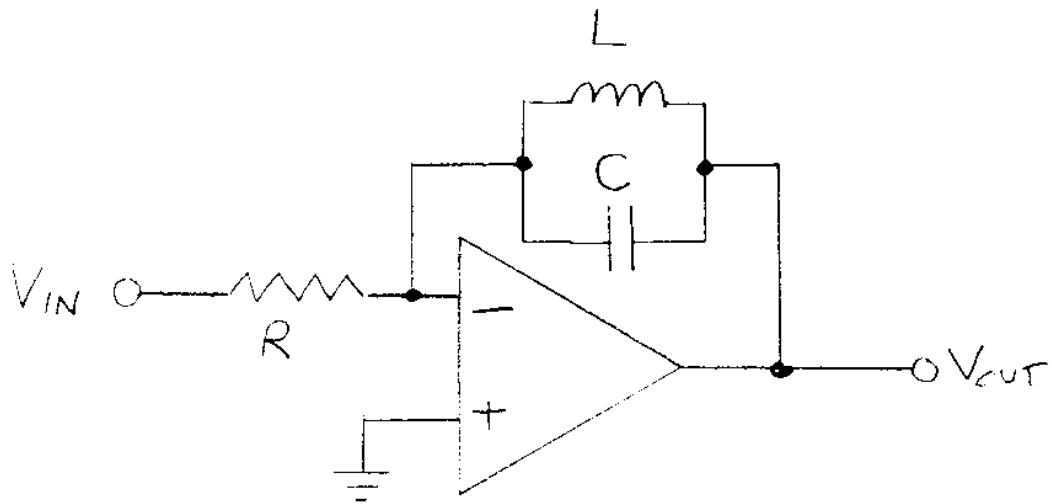


V (AT INVERTING INPUT)



V_{OUT}





2. Consider the above circuit. In terms of R , L , C and V_{in} : (a) Which of the circuit elements are important in determining the gain in the limit of low frequencies? (b) Which circuit elements are important in determining the gain in the high-frequency limit? (c) At low frequencies, what's the gain? (Hint: The gain is a complex number, and don't just set the frequency equal to zero; the frequency is finite, but small.) (d) What do you expect to happen at the resonant frequency of the LC pair? What physical limitation of the circuit components would limit this behavior?

3. "311" with Schmitt trigger inputs. Exercise 4.10, p. 232, in the textbook. Make a careful sketch of your circuit, carefully showing voltages and component values. A lab features this circuit.

[ver 28Feb13 14:55]